



## SEQUENCE LISTING

<110> WOODS, VIRGIL L. JR.

<120> METHODS FOR CRYSTALLOGRAPHIC STRUCTURE DETERMINATION  
EMPLOYING HYDROGEN EXCHANGE ANALYSIS

<130> 041673-3202

<140> 10/688,193

<141> 2003-10-17

<150> 60/419,651

<151> 2002-10-18

<160> 17

<170> PatentIn Ver. 3.3

<210> 1

<211> 104

<212> PRT

<213> Equus caballus

<400> 1

Gly Asp Val Glu Lys Gly Lys Lys Ile Phe Val Gln Lys Cys Ala Gln  
1 5 10 15

Cys His Thr Val Glu Lys Gly Gly Lys His Lys Thr Gly Pro Asn Leu  
20 25 30

His Gly Leu Phe Gly Arg Lys Thr Gly Gln Ala Pro Gly Phe Thr Tyr  
35 40 45

Thr Asp Ala Asn Lys Asn Lys Gly Ile Thr Trp Lys Glu Glu Thr Leu  
50 55 60

Met Glu Tyr Leu Glu Asn Pro Lys Lys Tyr Ile Pro Gly Thr Lys Met  
65 70 75 80

Ile Phe Ala Gly Ile Lys Lys Lys Thr Glu Arg Glu Asp Leu Ile Ala  
85 90 95

Tyr Leu Lys Lys Ala Thr Asn Glu  
100

<210> 2

<211> 289

<212> PRT

<213> Homo sapiens

<400> 2

Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His Gly Gln  
1 5 10 15

Ile Gly His Gly Asp Val Val Asn Leu Thr Gly Glu Ala Gly Gln Glu  
20 25 30

Pro Gly Gly Leu Val Val Pro Pro Thr Asp Ala Pro Val Ser Pro Thr  
                   35                                  40                                  45  
 Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His Asp Phe Tyr  
           50                                  55                                  60  
 Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly Ser Ser Arg  
   65                                  70                                  75                                  80  
 Leu Ser Glu Ala Glu Phe Glu Val Leu Lys Ala Phe Val Val Asp Met  
                                   85                                  90                                  95  
 Met Glu Arg Leu Arg Val Ser Gln Lys Trp Val Arg Val Ala Val Val  
                   100                                  105                                  110  
 Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys Asp Arg Lys  
                   115                                  120                                  125  
 Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr Ala Gly  
           130                                  135                                  140  
 Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln  
   145                                  150                                  155                                  160  
 Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile Ala Leu Leu  
                   165                                  170                                  175  
 Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe Val Arg  
                   180                                  185                                  190  
 Tyr Val Gln Gly Leu Lys Lys Lys Lys Val Ile Val Ile Pro Val Gly  
           195                                  200                                  205  
 Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu Lys Gln  
   210                                  215                                  220  
 Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp Glu Leu Glu  
   225                                  230                                  235                                  240  
 Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala Pro Glu  
                   245                                  250                                  255  
 Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val Thr Val Gly  
                   260                                  265                                  270  
 Pro Gly Leu Leu Gly Val Ser Thr Leu Gly Pro Lys Arg Asn Ser Met  
           275                                  280                                  285  
 Val

<210> 3  
 <211> 213  
 <212> PRT  
 <213> Gallus gallus

&lt;400&gt; 3

```

Met Val His Gln Phe Phe Arg Asp Met Asp Asp Glu Glu Ser Trp Ile
 1           5           10           15

Lys Glu Lys Lys Leu Leu Val Ser Ser Glu Asp Tyr Gly Arg Asp Leu
          20           25           30

Thr Gly Val Gln Asn Leu Arg Lys Lys His Lys Arg Leu Glu Ala Glu
      35           40           45

Leu Ala Ala His Glu Pro Ala Ile Gln Ser Val Leu Asp Thr Gly Lys
 50           55           60

Lys Leu Ser Asp Asp Asn Thr Ile Gly Lys Glu Glu Ile Gln Gln Arg
 65           70           75           80

Leu Ala Gln Phe Val Asp His Trp Lys Glu Leu Lys Gln Leu Ala Ala
          85           90           95

Ala Arg Gly Gln Arg Leu Glu Glu Ser Leu Glu Tyr Gln Gln Phe Val
      100           105           110

Ala Asn Val Glu Glu Glu Glu Ala Trp Ile Asn Glu Lys Met Thr Leu
 115           120           125

Val Ala Ser Glu Asp Tyr Gly Asp Thr Leu Ala Ala Ile Gln Gly Leu
 130           135           140

Leu Lys Lys His Glu Ala Phe Glu Thr Asp Phe Thr Val His Lys Asp
 145           150           155           160

Arg Val Asn Asp Val Cys Ala Asn Gly Glu Asp Leu Ile Lys Lys Asn
          165           170           175

Asn His His Val Glu Asn Ile Thr Ala Lys Met Lys Gly Leu Lys Gly
      180           185           190

Lys Val Ser Asp Leu Glu Lys Ala Ala Ala Gln Arg Lys Ala Lys Leu
 195           200           205

Asp Glu Asn Ser Ala
 210

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&lt;210&gt; 4

&lt;211&gt; 213

&lt;212&gt; PRT

&lt;213&gt; Gallus gallus

&lt;400&gt; 4

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Met Val His Gln Phe Phe Arg Asp Met Asp Asp Glu Glu Ser Trp Ile
 1           5           10           15

Lys Glu Lys Lys Leu Leu Val Ser Ser Glu Asp Tyr Gly Arg Asp Leu
          20           25           30

Thr Gly Val Gln Asn Leu Arg Lys Lys His Lys Arg Leu Glu Ala Glu
      35           40           45

```

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ala | Ala | His | Glu | Pro | Ala | Ile | Gln | Ser | Val | Leu | Asp | Thr | Gly | Lys |
| 50  |     |     |     |     |     | 55  |     |     |     | 60  |     |     |     |     |     |
| Lys | Leu | Ser | Asp | Asp | Asn | Thr | Ile | Gly | Lys | Glu | Glu | Ile | Gln | Gln | Arg |
| 65  |     |     |     |     |     | 70  |     |     |     | 75  |     |     |     | 80  |     |
| Leu | Ala | Gln | Phe | Val | Asp | His | Trp | Lys | Glu | Leu | Lys | Gln | Leu | Ala | Ala |
|     |     |     |     | 85  |     |     |     |     |     | 90  |     |     |     | 95  |     |
| Ala | Arg | Gly | Gln | Arg | Leu | Glu | Glu | Ser | Leu | Glu | Tyr | Gln | Gln | Phe | Val |
|     |     | 100 |     |     |     |     |     | 105 |     |     |     | 110 |     |     |     |
| Ala | Asn | Val | Glu | Glu | Glu | Glu | Ala | Trp | Ile | Asn | Glu | Lys | Met | Thr | Leu |
|     |     | 115 |     |     |     | 120 |     |     |     |     |     | 125 |     |     |     |
| Val | Ala | Ser | Glu | Asp | Tyr | Gly | Asp | Thr | Leu | Ala | Ala | Ile | Gln | Gly | Leu |
| 130 |     |     |     |     |     | 135 |     |     |     | 140 |     |     |     |     |     |
| Leu | Lys | Lys | His | Glu | Ala | Phe | Glu | Thr | Asp | Phe | Thr | Val | His | Lys | Asp |
| 145 |     |     |     | 150 |     |     |     |     |     | 155 |     |     |     | 160 |     |
| Arg | Val | Asn | Asp | Val | Cys | Ala | Asn | Gly | Glu | Asp | Leu | Ile | Lys | Lys | Asn |
|     |     |     |     | 165 |     |     |     |     |     | 170 |     |     |     | 175 |     |
| Asn | His | His | Val | Glu | Asn | Ile | Thr | Ala | Lys | Met | Lys | Gly | Leu | Lys | Gly |
|     |     | 180 |     |     |     |     |     | 185 |     |     |     | 190 |     |     |     |
| Lys | Val | Ser | Asp | Leu | Glu | Lys | Ala | Ala | Ala | Gln | Arg | Lys | Ala | Lys | Leu |
|     |     | 195 |     |     |     | 200 |     |     |     |     |     | 205 |     |     |     |
| Asp | Glu | Asn | Ser | Ala |     |     |     |     |     |     |     |     |     |     |     |
| 210 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

```
<210> 5
<211> 415
<212> PRT
<213> Artificial Sequence
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<220>  
<223> Description of Artificial Sequence: Synthetic protein construct

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<400> 5  
Ser Ile Glu Ile Pro Ala Gly Leu Thr Glu Leu Leu Gln Gly Phe Thr  
   1                               10                   15  
  
Val Glu Val Leu Arg His Gln Pro Ala Asp Leu Leu Glu Phe Ala Leu  
    20                25                 30  
  
Gln His Phe Thr Arg Leu Gln Gln Glu Asn Glu Arg Lys Gly Ala Ala  
    35                40                 45  
  
Arg Phe Gly His Glu Gly Arg Thr Trp Gly Asp Ala Gly Ala Ala Ala  
   50                55                 60
```

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Gly | Gly | Gly | Thr | Pro | Ser | Lys | Gly | Val | Asn | Phe | Ala | Glu | Glu | Pro | Met |  |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |  |
| Arg | Ser | Asp | Ser | Glu | Asn | Gly | Glu | Glu | Glu | Glu | Ala | Ala | Glu | Ala | Gly |  |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     |     | 95  |  |
| Ala | Phe | Asn | Ala | Pro | Val | Ile | Asn | Arg | Phe | Thr | Arg | Arg | Ala | Ser | Val |  |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |  |
| Cys | Ala | Glu | Ala | Tyr | Asn | Pro | Asp | Glu | Glu | Glu | Asp | Asp | Ala | Glu | Ser |  |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |  |
| Arg | Ile | Ile | His | Pro | Lys | Thr | Asp | Asp | Gln | Arg | Asn | Arg | Leu | Gln | Glu |  |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |
| Ala | Cys | Lys | Asp | Ile | Leu | Leu | Phe | Lys | Asn | Leu | Asp | Pro | Glu | Gln | Met |  |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |  |
| Ser | Gln | Val | Leu | Asp | Ala | Met | Phe | Glu | Lys | Leu | Val | Lys | Glu | Gly | Glu |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |
| His | Val | Ile | Asp | Gln | Gly | Asp | Asp | Gly | Asp | Asn | Phe | Tyr | Val | Ile | Asp |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |
| Arg | Gly | Thr | Phe | Asp | Ile | Tyr | Val | Lys | Cys | Asp | Gly | Val | Gly | Arg | Cys |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |
| Val | Gly | Asn | Tyr | Asp | Asn | Arg | Gly | Ser | Phe | Gly | Glu | Leu | Ala | Leu | Met |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |
| Tyr | Asn | Thr | Pro | Arg | Ala | Ala | Thr | Ile | Thr | Ala | Thr | Ser | Pro | Gly | Ala |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |
| Leu | Trp | Gly | Leu | Asp | Arg | Val | Thr | Phe | Arg | Arg | Ile | Ile | Val | Lys | Asn |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |
| Asn | Ala | Lys | Lys | Arg | Lys | Met | Tyr | Glu | Ser | Phe | Ile | Glu | Ser | Leu | Pro |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |
| Phe | Leu | Lys | Ser | Leu | Glu | Val | Ser | Glu | Arg | Leu | Lys | Val | Val | Asp | Val |  |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |
| Ile | Gly | Thr | Lys | Val | Tyr | Asn | Asp | Gly | Glu | Gln | Ile | Ile | Ala | Gln | Gly |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |
| Asp | Ser | Ala | Asp | Ser | Phe | Phe | Ile | Val | Glu | Ser | Gly | Glu | Val | Arg | Ile |  |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |  |
| Thr | Met | Lys | Arg | Lys | Gly | Lys | Ser | Asp | Ile | Glu | Glu | Asn | Gly | Ala | Val |  |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |  |
| Glu | Ile | Ala | Arg | Cys | Leu | Arg | Gly | Gln | Tyr | Phe | Gly | Glu | Leu | Ala | Leu |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |
| Val | Thr | Asn | Lys | Pro | Arg | Ala | Ala | Ser | Ala | His | Ala | Ile | Gly | Thr | Val |  |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |

Lys Cys Leu Ala Met Asp Val Gln Ala Phe Glu Arg Leu Leu Gly Pro  
 370 375 380

Cys Met Glu Ile Met Lys Arg Asn Ile Ala Thr Tyr Glu Glu Gln Leu  
 385 390 395 400

Val Ala Leu Phe Gly Thr Asn Met Asp Ile Val Glu Pro Thr Ala  
 405 410 415

<210> 6

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
 peptide

<400> 6

Ser Ile Glu Ile Pro Ala Gly Leu Thr Glu Leu Leu Gln Gly Phe Thr  
 1 5 10 15

Val Glu Val Leu Arg His Gln Pro Ala Asp Leu  
 20 25

<210> 7

<211> 102

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
 peptide

<400> 7

Leu Leu Glu Phe Ala Leu Gln His Phe Thr Arg Leu Gln Gln Glu Asn  
 1 5 10 15

Glu Arg Lys Gly Ala Ala Arg Phe Gly His Glu Gly Arg Thr Trp Gly  
 20 25 30

Asp Ala Gly Ala Ala Ala Gly Gly Gly Thr Pro Ser Lys Gly Val Asn  
 35 40 45

Phe Ala Glu Glu Pro Met Arg Ser Asp Ser Glu Asn Gly Glu Glu Glu  
 50 55 60

Glu Ala Ala Glu Ala Gly Ala Phe Asn Ala Pro Val Ile Asn Arg Phe  
 65 70 75 80

Thr Arg Arg Ala Ser Val Cys Ala Glu Ala Tyr Asn Pro Asp Glu Glu  
 85 90 95

Glu Asp Asp Ala Glu Ser  
 100

<210> 8  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 peptide

<400> 8  
 Gly Glu Leu Ala Leu Met Tyr Asn Thr Pro Arg Ala Ala Thr Ile Thr  
 1 5 10 15

Ala

<210> 9  
 <211> 31  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 peptide

<400> 9  
 Ala Val Glu Ile Ala Arg Cys Leu Arg Gly Gln Tyr Phe Gly Glu Leu  
 1 5 10 15

Ala Leu Val Thr Asn Lys Pro Arg Ala Ala Ser Ala His Ala Ile  
 20 25 30

<210> 10  
 <211> 23  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 peptide

<400> 10  
 Ala Gln Gly Asp Ser Ala Asp Ser Phe Phe Ile Val Glu Ser Gly Glu  
 1 5 10 15

Val Arg Ile Thr Met Lys Arg  
 20

<210> 11  
 <211> 7  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 11

Val Gln Ala Phe Glu Arg Leu  
1 5

<210> 12

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 12

Met Lys Arg Asn Ile Ala Thr Tyr Glu Glu Gln Leu Val Ala Leu Phe  
1 5 10 15

<210> 13

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 13

Ile Leu Leu Phe Lys  
1 5

<210> 14

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 14

Arg Val Thr Phe Arg Arg Ile Ile Val Lys Asn Asn Ala Lys Lys Arg  
1 5 10 15

Lys Met Tyr Glu Ser Phe Ile Glu Ser Leu Pro Phe Leu Lys  
20 25 30

<210> 15

<211> 12

<212> PRT

<213> Artificial Sequence



&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic peptide

&lt;400&gt; 15

Val Gln Ala Phe Glu Arg Leu Leu Gly Pro Cys Met  
 1 5 10

&lt;210&gt; 16

&lt;211&gt; 193

&lt;212&gt; PRT

&lt;213&gt; Thermotoga maritima

&lt;400&gt; 16

Met Gly Ser Asp Lys Ile His His His His His His Met Arg Lys Ala  
 1 5 10 15

Trp Val Lys Thr Leu Ala Leu Asp Arg Val Ser Asn Thr Pro Val Val  
 20 25 30

Ile Leu Gly Ile Glu Gly Thr Asn Arg Val Leu Pro Ile Trp Ile Gly  
 35 40 45

Ala Cys Glu Gly His Ala Leu Ala Leu Ala Met Glu Lys Met Glu Phe  
 50 55 60

Pro Arg Pro Leu Thr His Asp Leu Leu Leu Ser Val Leu Glu Ser Leu  
 65 70 75 80

Glu Ala Arg Val Asp Lys Val Ile Ile His Ser Leu Lys Asp Asn Thr  
 85 90 95

Phe Tyr Ala Thr Leu Val Ile Arg Asp Leu Thr Tyr Thr Asp Glu Glu  
 100 105 110

Asp Glu Glu Ala Ala Leu Ile Asp Ile Asp Ser Arg Pro Ser Asp Ala  
 115 120 125

Ile Ile Leu Ala Val Lys Thr Gly Ala Pro Ile Phe Val Ser Asp Asn  
 130 135 140

Leu Val Glu Lys His Ser Ile Glu Leu Glu Val Asn Glu Thr Gln Asp  
 145 150 155 160

Glu Glu Glu Glu Phe Lys Lys Phe Val Glu Asn Leu Asn Ile Asp Thr  
 165 170 175

Phe Lys Gln Met Ile Glu Lys Lys Arg Glu Glu Asp Glu Glu Gly Glu  
 180 185 190

Ser

&lt;210&gt; 17

&lt;211&gt; 157

&lt;212&gt; PRT

&lt;213&gt; Thermotoga maritima

&lt;400&gt; 17

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Gly | Ser | Asp | Lys | Ile | His | His | His | His | His | His | Met | Arg | Lys | Ala |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Val | Lys | Thr | Leu | Ala | Leu | Asp | Arg | Val | Ser | Asn | Thr | Pro | Val | Val |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Leu | Gly | Ile | Glu | Gly | Thr | Asn | Arg | Val | Leu | Pro | Ile | Trp | Ile | Gly |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Cys | Glu | Gly | His | Ala | Leu | Ala | Leu | Ala | Met | Glu | Lys | Met | Glu | Phe |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Arg | Pro | Leu | Thr | His | Asp | Leu | Leu | Leu | Ser | Val | Leu | Glu | Ser | Leu |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Ala | Arg | Val | Asp | Lys | Val | Ile | Ile | His | Ser | Leu | Lys | Asp | Asn | Thr |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Tyr | Ala | Thr | Leu | Val | Ile | Arg | Asp | Leu | Thr | Tyr | Thr | Asp | Glu | Glu |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Glu | Glu | Ala | Ala | Leu | Ile | Asp | Ile | Asp | Ser | Arg | Pro | Ser | Asp | Ala |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Ile | Leu | Ala | Val | Lys | Thr | Gly | Ala | Pro | Ile | Phe | Val | Ser | Asp | Asn |
|     | 130 |     |     |     |     |     | 135 |     |     |     | 140 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Val | Glu | Lys | His | Ser | Ile | Glu | Leu | Glu | Val | Asn | Glu |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |